

SUBJECT DETAILS AND SYLLABUS
2019/2020. II. SEMESTER

<i>Subject Name</i>	<i>Communication Engineering</i>
<i>Subject code</i>	<i>IVB001ANVM</i>
<i>Classes per week (L/P/Lab)</i>	<i>2,1,0</i>
<i>Number of Credits</i>	<i>4</i>
<i>Division/type</i>	<i>Electrical Engineering (BSc)</i>
<i>Program</i>	<i>full-time</i>
<i>Requirement</i>	<i>midterm grade</i>
<i>Semester</i>	<i>4th / 2019-2020. spring</i>
<i>Preliminary requirements</i>	<i>-</i>
<i>Organization name</i>	<i>Department of Automation</i>
<i>Responsible Lecturer(s)</i>	<i>Zsolt Kisander, Péter Megyeri</i>

GOAL OF INSTRUCTION

This course cover fundamentals of analog and digital communications. We study the related basics of signals and systems (sampling and quantization, modulation, signal detection) and the physical and electrical properties of communication systems.

SUBJECT CONTENT

Lecture:

1. Historical background and related fields. Required topics in mathematics, physics, electronics and information theory.
2. Fourier representation of signals and systems. Mathematical description of signals in time and frequency domain. Fourier series and transformation.
3. Fourier representation of signals and systems. Mathematical description of systems. Convolution and its properties. Filters, amplifiers, attenuators.
4. Physical and electrical properties of signals and systems. Losses, noises, in different transfer medias.
5. Wired transmission. Coaxial cable and twisted pair. Equivalent circuits of cables.
6. Wired transmission. Telegraph equations. Attenuation, insertion loss, mismatch loss.
7. Optical cables.
8. Wireless transmission. Basics of radio communication. Common wireless standards.
9. Amplitude modulation and demodulation.
10. Angle modulations, frequency and phase modulation.
11. PCM and delta modulation.

12. Baseband data transmission. Intersymbol interference. Nyquist channel.
13. Digital modulations (binary), ASK, FSK, PSK.
14. Digital modulations, (quadrature) QAM, QPSK.

Lab.:

1. Industrial, RS232.
2. Industrial, RS422 and RS485.
3. Industrial, Modbus.
4. CAN.
5. Embedded, UART, SPI, I2C.

EXAMINATION AND EVALUATION SYSTEM

During the semester, students write one test. The topic of the test is the material of the lectures. The homework topics and the exact time of the test will be announced before spring break. Students must hand in an acceptable homework and pass the midterm test to get the signature.

LITERATURE

- Introduction to Analog & Digital Communications 2nd ed., Haykin and Moher, 2007, ISBN-13: 9788126536535

SCHEDULE

		STUDY PERIOD, STUDY WEEKS															EXAM PERIOD				
2019/2020. II. SEMESTER		1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	1.	2.	3.	4.	5.
Lecture number																					
Practice/Labs number																					
Midterm test															x						
Homework	publishing									x											
	submitting														x						
Signature/Semester rating																					
Exam																					

2020.

.....
responsible lecturer